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ABSTRACT

A two-level model was formulated for the evaluation projects engaged in staff development in the Memphis elementary schools. The model takes into account that such projects are responsible for direct outcome in terms of teacher behavior, and indirect outcome in terms of pupil behavior. The two-level model provides an opportunity for assessing the validity of the theoretical base underlying the project's objectives, and provides for process as well as outcome evaluation. (Author)

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TWO-LEVEL EVALUATION STRATEGY FOR PROJECTS ENGAGED IN STAFF DEVELOPMENT

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TWO-LEVEL EVALUATION STRATEGY FOR PROJECTS ENGAGED IN STAFF DEVELOPMENT

by

Helen C. Smith
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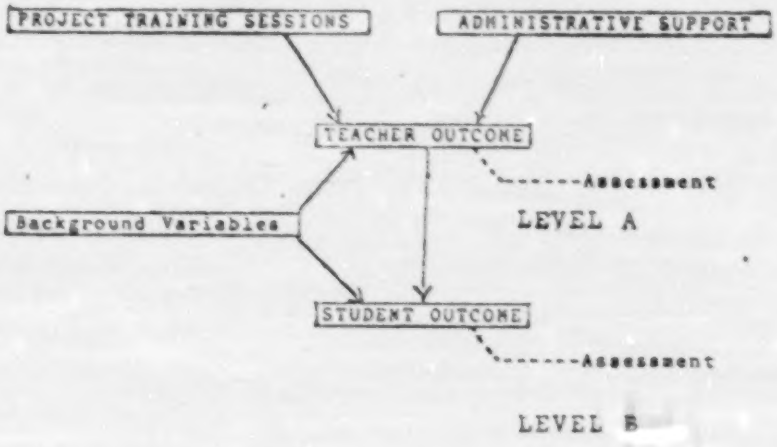
This paper presents a model for evaluation of projects engaged in staff development which takes into account that such projects are responsible for a direct outcome in terms of teacher behavior which is hypothesized to bring about a desirable outcome in terms of student behavior.

COMPONENTS OF THE TWO-LEVEL MODEL

A number of components are considered in the model which are as follows: (1) the staff development treatment, (2) administrative support to implementation, (3) the teacher outcome in terms of observed implementation of the staff development goals, (4) the desired student outcome, and (5) background variables expected to influence the teacher implementation outcome and the desired student outcome.



ANALYSES MADE IN THE TWO-LEVEL MODEL

As indicated by the above diagram, there are two outcome assessments performed. One involves teacher implementation of the staff development objectives in the classroom (the Level A assessment) and the other involves the student outcome (Level B assessment).

Level A Assessment

Two analyses are performed at Level A. First, scores on instruments measuring teachers' classroom implementation are compared between a project group of teachers and a control group of teachers for differences of statistical significance. This analysis requires that instruments such as classroom observation schemes be used so that levels may be objectively quantified. In Appendix A of this paper will be found example instruments which yield this kind of data on the implementation process. Presented in Appendix B is an example of a checklist type of observation form used to evaluate implementation which is not suitable for use in this analysis.

A second analysis is performed at Level A in which step-wise multiple regression is used to obtain the rank of the project attendance variable in predicting teachers' implementation scores relative to influential variables drawn from other components of the model.

Level B Assessment

The outcome assessment at Level B involves two analyses also. The first compares scores on the student outcome measures from the project group of teachers' classes with those of students from the control group of teachers' classes for differences of statistical significance.

The second analysis at Level B involves step-wise multiple regression equations predicting scores on the student outcome measures. Rank of the

measures on teachers' classroom implementation are found relative to variables drawn from other components of the model which are expected to influence the student outcome.

SPECIFIC ADVANTAGES PROVIDED BY THE TWO-LEVEL ANALYSES

1. Provide a Safeguard Against Evaluation of a "Non-Event"

The Level A outcome assessment comparing scores on instruments measuring implementation of project objectives in the classrooms of project and control groups of teachers enables the evaluator to see whether or not treatment levels can be differentiated for a valid assessment at Level B in regard to student outcome. In the case of "no difference" results obtained at Level B, the evaluator may be saved from making erroneous conclusions about the worth of the teacher behavior desired with knowledge of implementation provided by the Level A comparison. Charters and Jones in the November, 1973 issue of Educational Researcher point out that differentiation of treatment levels is required before valid assessment of effect can be made in terms of student outcome.

2. Provides Construct Validity Test for Theory Which Underlies Project Objectives in the Face of Poor Implementation

The step-wise regression analysis performed at Level B can indicate worth of the objectives for teacher behavior in cases where no difference appears between project and control groups of teachers in the implementation, Level A assessment. The normal variation in scores on instruments measuring implementation are assessed for their ability to predict student outcome. Provided the instruments appropriately measure the teaching behavior being studied, this analysis can provided a validity test for the theory which generated the hypothesis that the specified teacher behavior could bring about the student outcome desired.

3. Provides an Assessment of the Project's Effect in Competition with Other Influential Variables

The step-wise multiple regression analyses performed rank the project variables - staff development attendance at Level A and measures of implementation at Level B - relative to the component variables selected, according to contributions made to equations predicting the two outcomes. These analyses provide information regarding effect of the project relative to say socioeconomic status and can indicate whether or not there is a project effect which is over and above that which may be attributed to such influences.

APPLICATION EXAMPLE - MEMPHIS PROJECT READ

Memphis Project READ is a staff development project funded by the local Board of Education. During the 1972-73 school year it provided a week's released time for all the system's grade 1 through 3 teachers so that they could attend sessions in which lectures and activities were presented regarding diagnostic-prescriptive approaches to teaching reading. After the week-long training sessions teachers were accompanied back to the classrooms by members of the project staff who assisted in implementation. This personnel helped teachers test students to obtain reading skills needs and instructional reading levels, demonstrated methods for varying instruction and student grouping according to diagnosed needs, and helped set up interest-centers in the classrooms.

Level A Instruments

Two instruments were used to measure outcome in terms of the teachers' implementation which were (1) Cohen's Taxonomy Classroom Analysis Scheme (TCAS)* and (2) an individually administered informal reading inventory.

*For a detailed description presented by Alan Cohen, see October, 1971 issue of Journal of The Reading Specialist

A description of these is presented in Appendix A. The Cohen instrument provided a score on extent to which teachers diversified instruction and a score on extent to which teachers had students involved in learning activities. The informal reading inventories administered to students assessed extent to which teachers placed students in reading materials at their instructional word recognition and comprehension levels.

Level A Component Variables

Variables expected to be influential in regard to teacher outcome at Level A which were placed in step-wise regression with the project attendance variable were as follows: (1) years experience of teacher, (2) number of college methods courses in reading taken by teacher, (3) socioeconomic status of the school, (4) pretest level of students, (5) ratings of support services and materials by teacher, (6) grade level of students, and (7) a written exam over principles presented in the project's staff development sessions.

Level B Instruments

The instrument measuring student outcome in terms of reading achievement were the reading subtests of the California Achievement Tests.

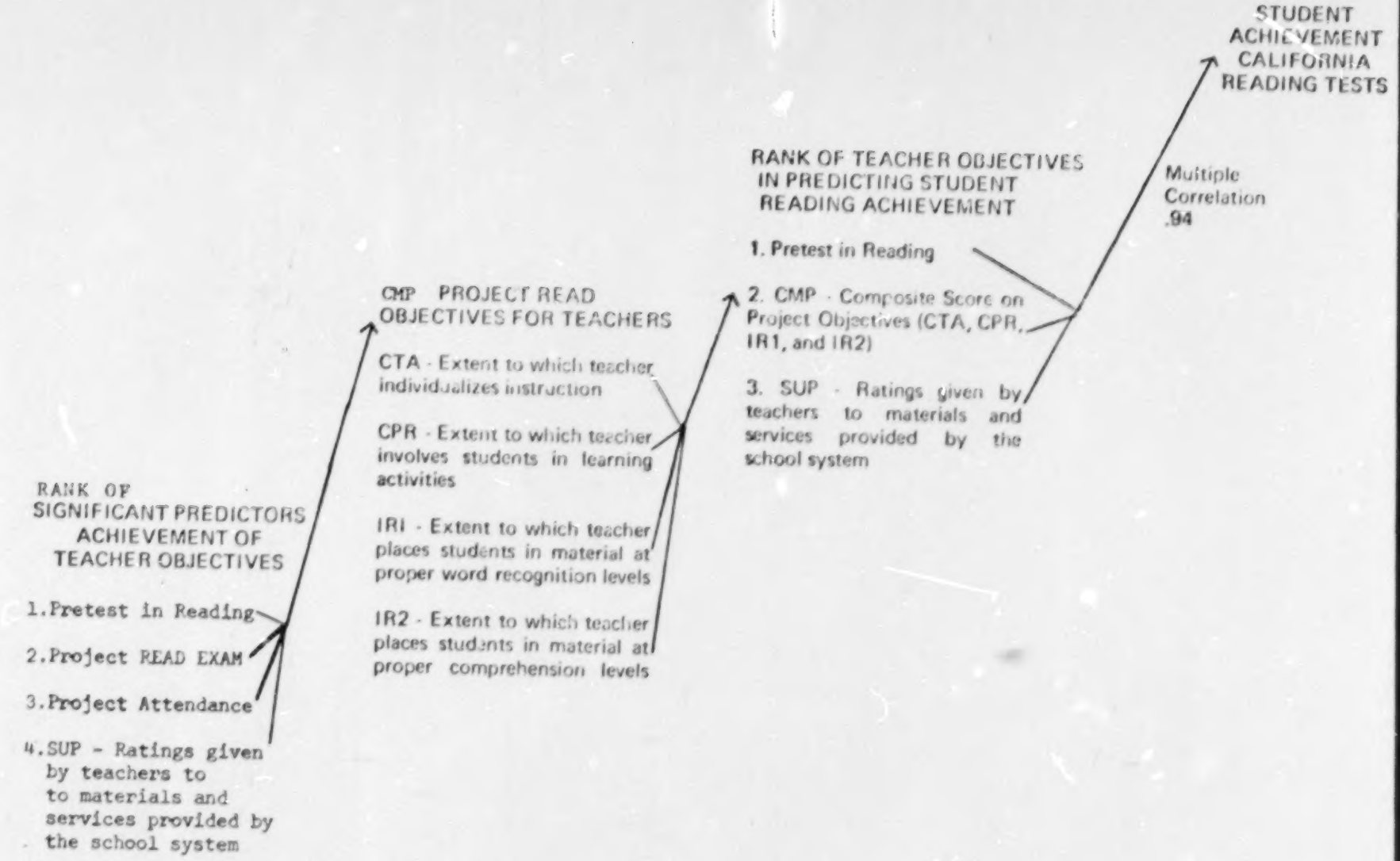
Level B Component Variables

Variables expected to be influential in regard to student outcome which were placed in step-wise regression with measures on teacher implementation of project goals included: (1) pretest achievement of students, (2) socioeconomic status of school, (3) student attitude toward the reading program, (4) teacher ratings of support services and materials, (5) years experience of teachers, and (6) number of college methods courses taken in reading by teachers.

Results

Comparisons made on outcome measures at both Levels A and B favored the project teachers and students over the control groups of teachers and students. Heavy loss of student subjects during implementation of the City's plan for desegregation placed results of the student comparison on shaky ground. It was reassuring to know that the multiple regression analyses could let us know whether or not the student outcome results should be expected. Results of step-wise multiple regression analyses performed at the two levels are summarized below. It is seen that the project attendance variable made a significant contribution to the equations predicting teacher performance at Level A. It is interesting to note that the written exam over principles presented in the staff development sessions outranked it. Composite scores on teacher implementation of the project objectives at Level A were found to correlate with student achievement at .62 and ranked second best predictor of student achievement at Level B.

SUMMARY OF RELATIONSHIPS REVEALED BY RESULTS


RANK OF SIGNIFICANT PREDICTORS ACHIEVEMENT OF TEACHER OBJECTIVES
1. Pretest in Reading
2. Project READ EXAM
3. Project Attendance
4. SUP - Ratings given by teachers to to materials and services provided by the school system
CMP PROJECT READ OBJECTIVES FOR TEACHERS
CTA - Extent to which teacher individualizes instruction
CPR - Extent to which teacher involves students in learning activities
IR1 - Extent to which teacher places students in material at proper word recognition levels
IR2 - Extent to which teacher places students in material at proper comprehension levels
RANK OF TEACHER OBJECTIVES IN PREDICTING STUDENT READING ACHIEVEMENT
1. Pretest in Reading
2. CMP - Composite Score on Project Objectives (CTA, CPR, IR1, and IR2)
3. SUP - Ratings given by teachers to materials and services provided by the school system
Multiple Correlation .94
STUDENT ACHIEVEMENT CALIFORNIA READING TESTS

Another plus associated with the analyses performed is illustrated by Project READ results. Teachers' ratings of support from the school system in the form of services and materials were found to correlate with student outcome at .52 and were found high ranked in predicting both teacher and student performance. Findings like these provide strong rationales for requests from project personnel for additional support services and materials.

IMPORTANT CONSIDERATIONS TO BEAR IN MIND BEFORE CHOOSING TO USE THE TWO-LEVEL MODEL

It is suggested that the following be considered before this model is selected for the evaluation of a project:

(1) There are numerous assumptions involved in the analyses performed. Most evaluators will need the assistance of a mathematician in performing them and in interpreting results obtained.

(2) The analyses performed provide information regarding a project's effect or potential effectiveness. A look at pretest-posttest gain scores on the student outcome measures could result in a significant project effect being judged unacceptable.

(3) It may be difficult to find the appropriate instruments for measuring Level A implementation by teachers.

APPENDIX A

INSTRUMENTS MEASURING LEVEL A TEACHER OUTCOME FOR MEMPHIS PROJECT READ

Two instruments were used to obtain data on implementation in teachers classroom of Project READ objectives concerning diagnostic-prescriptive approaches to teaching reading. The first, Cohen's Taxonomy Classroom Analysis Scheme (TCAS), was used to assess extent of individualization found and extent of pupil involvement in learning activities. In using this instrument the observer defines materials and pupils' learning activities in terms of an eight-digit Taxonomy coding system. The observer selects a 42-minute class period and observes a random sample of 9 students every two minutes as they use materials and engage in learning activities. A TCAS observation analysis sheet follows. To the left it may be seen that A through K treatments were available in the classroom. To the right student participation or non participation is recorded. (N=non participation, T=transition between tasks). The score indicating student involvement is derived by dividing the number of observations less N by the number of observations.

A second instrument, an informal reading inventory, was used to obtain extent to which teachers provided students reading material at appropriate word recognition and comprehension levels. Random samples of students from each teacher's class were asked to read the stories they were to have in class the next day. A word-recognition and comprehension score was obtained as described on the instrument, a copy of which follows.

TCAS OBSERVATION ANALYSIS SHEETS

School 14 Teacher 21 Observer RL

Date 1-17 Grade 3 Time 9:15

TREATMENTS AVAILABLE										PUPILS OBSERVED									
Items	Basic Skill	Sub Skill	Level	Input	Output	Media	Start	Group	Time	Beth	Carla	Bob	Lois	Ann	Jerry	Violet	Tom	Alice	Time
	2	5	2	2	2	2	3	2		14	10	43	10	62	32	14	72	16	
A	1	5	1	2	2	4	3	1	2	A	B	N	B	C	N	N			
B	2	1	1	2	2	2	4	1	4	N	N	N	B	N	N	N			
C	1	3	2	3	2	2	4	2	6	N	B	N	B	N	N	N			
D	1	6	1	2	2	3	4	2	8	N	B	N	B	N	N	[illegible]			
E	Copying work sheet								10	C	B	[illegible]	[illegible]	C	N	[illegible]	A		
F	1	5	1	2	2	4	3	2	12	N	B	[illegible]	B	C	N	N	A	N	
G	2	1	1	2	2	3	2	2	14	N	B	A	B	N	N	G	A	G	
H	2	1	1	2	2	2	4	3	16	C	B	A	B	C	N	N	A	B	
I	1	3	1	2	2	2	4	3	18	N	B	A	B	N	N	N	A	N	
J	1	1	1	2	2	4	3	1	20	N	N	N	B	C	N	N	A	B	
K	2	1	1	2	1	5	0	3	22	N	N	N	B	C	N	N	A	N	
									24	N	N	C	B	C	B	N	[illegible]	B	
									26	N	N	N	B	1	B	N	A	B	
									28	N	C	N	B	C	N	N	N	B	
									30	N	C	N	N	N	N	N	N	B	
									32	N	C	N	N	C	N	N	N	N	
									34	N	C	N	I	N	N	N	N	N	
									36	N	N	N	C	C	N	N	B	B	
									38	N	C	N	C	N	B	N	B	B	
									40	N	N	D	C	C	N	N	B	B	
									42	N	N	D	C	C	N	N	B	B	

CTA 21 CPR 56

Key P ratio = Participation (PPR & CPR) N = Non participation

CPR = (O-N) ÷ O (O = Observations) T = Transition between tasks

INDIVIDUAL INVENTORY

ASSESSING STUDENT ABILITY TO READ AND UNDERSTAND TEXTBOOK

Name of Student _____ Teacher _____ Grade ___ School ___

Name of textbook _____ Reading Level _____

PART I Instructions: Select a passage for reading from the text - 50 to 100 words in length. Ask student to read passage aloud without prereading. As errors occur check appropriate classification.

Word pronounced by examiner _____ Total _____

Word substitution _____ Total _____

Word insertion _____ Total _____

Word omission _____ Total _____

Word order reversal _____ Total _____

Total errors _____

Total number words in selection _____

WORD RECOGNITION SCORE _____
(Number of words less number of errors divided by number of words)

TIME _____

PART II Instruction: Read aloud to the student a selection from the text of approximately 100 words. Upon completion, ask 5 questions concerning the selection. Question #1 should call for extraction of the main idea. Questions 2 and 3 should ask for recall of factual information specifically stated in the selection. Questions 4 and 5 should involve the making of inference by student.

Questions	Correct
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

COMPREHENSION SCORE _____
(number correct answers divided by number of questions)

READING HABITS CHECKLIST

☐ finger pointing ☐ head movement ☐ repeats words or phrases ☐ vocalizes during silent reading
☐ loses place ☐ holds book too close to face

Other _____

APPENDIX B

EXAMPLE OF INAPPROPRIATE INSTRUMENT
MEASURING LEVEL A TEACHER OUTCOME

MEMPHIS CITY SCHOOLS
DIVISION OF RESEARCH

RATING SCALE FOR EVALUATING CLASSROOM TEACHER

Directions: Indicate by drawing a line around the appropriate number the extent to which a given teacher shows each characteristic. Use the following ratings:

1 - Almost always
2 - Most of the time
3 - Sometime
4 - Seldom or never
5 - Undecided
6 - Not applicable in program

Instructional Materials and Methods

1. Knows the skills of reading and how to teach them effectively, and instruction reflects this knowledge.	1	2	3	4	5	6
2. Knows clearly what he is trying to accomplish and transmits this knowledge to his pupils.	1	2	3	4	5	6
3. Teaches children in materials that will assure their success.	1	2	3	4	5	6
4. Keeps in the classroom a variety of reading materials on levels appropriate for his pupils and encourages them to use them.	1	2	3	4	5	6
5. Uses reading instructional materials that are interesting to children.	1	2	3	4	5	6
6. Praises pupils for reading achievement--in terms that are acceptable to them.	1	2	3	4	5	6
7. Diagnoses constantly and teaches in terms of findings.	1	2	3	4	5	6
8. Helps children to recognize their own individual strengths and weaknesses in reading.	1	2	3	4	5	6
9. Individualizes reading instruction whenever possible.	1	2	3	4	5	6

Pupil Attention to the Learning Task

10. Gets and maintains pupil attention through use of a variety of acceptable techniques.	1	2	3	4	5	6
11. Involves children immediately in routine activities as they come into the classroom each morning.	1	2	3	4	5	6
12. Gathers materials for each planned activity before that activity is to take place, and has them ready for immediate use.	1	2	3	4	5	6

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